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AGRICULTURAL NEWS LETTER

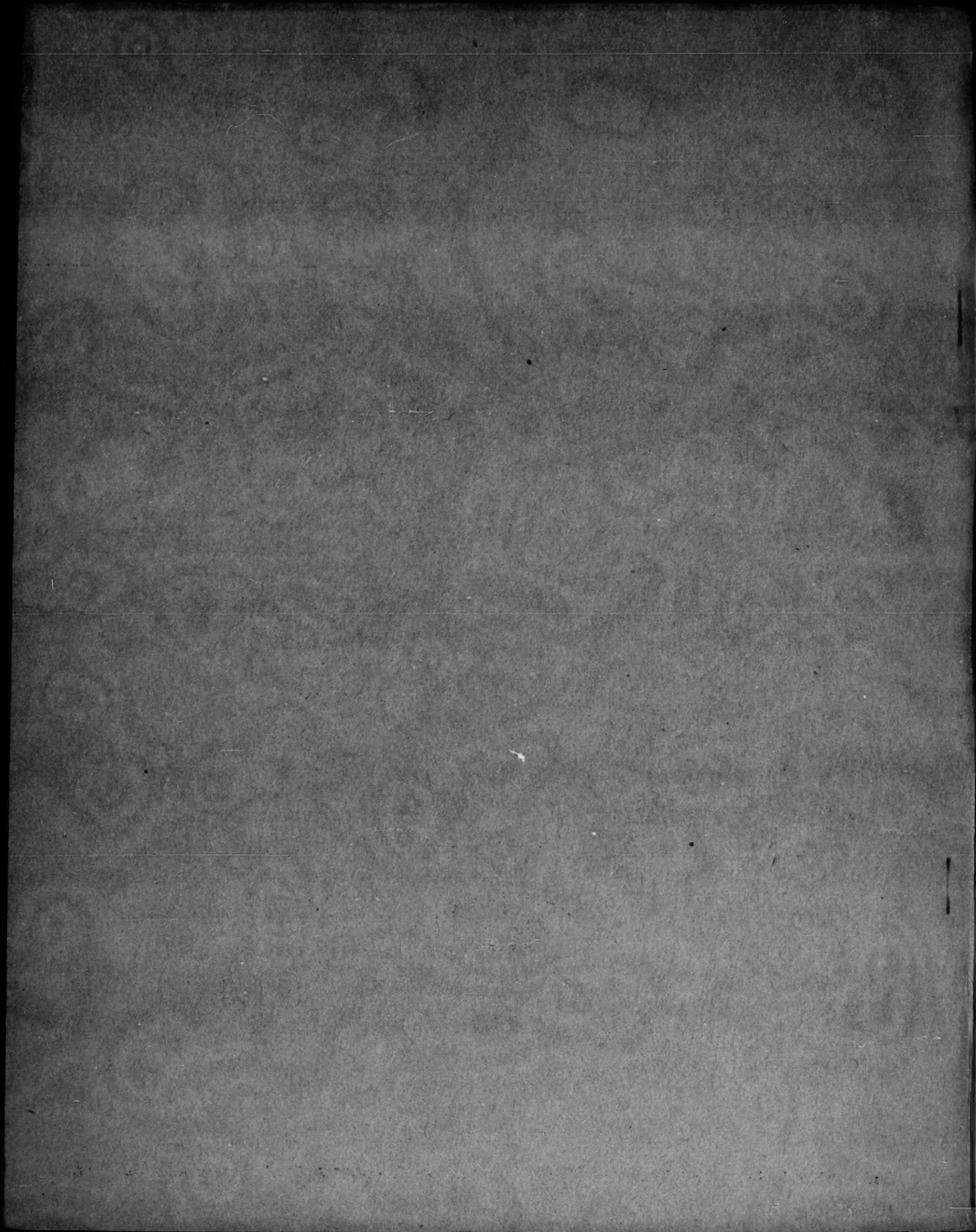
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This publication contains information regarding new developments of interest to agriculture based on laboratory and field investigations of the du Pont Company and its subsidiary companies. It also contains published reports and direct contributions of investigators of agricultural experiment stations and other institutions as related to the Company's products and other subjects of agricultural interest.



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CONTENTS

	<u>Page</u>
DDT Rids Livestock of Flies and Many Other Insects	2
Florida -- Results of DDT Tests on Cattle "Exceed Expectations" ..	3
-- 27,000 Range and Dairy Cattle Treated with DDT	3
Kansas -- 8,000 Cattle Freed from Fly Torment	5
Texas -- DDT Tested for Goat Lice and Other Parasites	7
Arizona & Wyoming -- DDT Controls Grasshoppers in Government Tests	8
Illinois -- Herd Has Time On Its Hands	9
Iowa -- Bulls Freed from Flies On Hot August Afternoon	10
How DDT Affects Flies That Alight on Treated Surfaces	10
Idaho -- Circular On Control of Sheep Ticks and Wood Ticks	11
-- DDT Eliminates Need for Flytraps in Test	11
Arkansas -- Complete Control of Flies Obtained in Few Days	12
California -- Scientists Convinced	12
-- DDT Controls Flies in Turkey Brooder	13
"Zerlate" Fungicide Available to Growers	14
War-Developed Wound Powder for Treating Livestock	15
"Cel-O-Glass" Plastic Coated Wire Mesh Window Material Available	16
How to Dress, Ship, and Cook Wild Game	17
Motion Pictures Show Fungous Disease Spores Develop	18
USDA Says Phenothiazine Worth Ten Millions Annually to Stockmen	20

DDT RIDS CATTLE AND OTHER LIVESTOCK OF FLIES AND MANY OTHER INSECTS

When preliminary studies a couple of years ago developed limited but rather conclusive indications that DDT insecticides would give exceptionally good control of many of the insects that attack livestock and poultry, research scientists immediately went to work to discover all they could about this new material.

Results of experiments all over the country, particularly large-scale tests under actual farming conditions in 1945, verify and strengthen the earlier claims that DDT is outstanding in its killing effect when used against such insects as flies, lice, and ticks that live on and near such farm livestock as beef and dairy cattle, sheep, hogs, and poultry.

Expressions of "unbelievable," "spectacular," "miraculous," "amazing," "sensational," and "revolutionary," have been used freely by research workers and stockmen to describe many of the results, some of which are reviewed in the following pages.

DDT In The Cattle Barn

Use of DDT insecticides in the cattle barn, "Capper's Farmer" for November, 1945, suggests, "may result in swinging open the barn doors and windows, and inviting the flies to come in and help themselves to a lethal dose that will dispose of them definitely as a farm nuisance."

Use of DDT May Encourage More Summer Feeding of Beef Cattle

The farm publication points out also that "highly finished beef steers usually make their top in autumn months because the supply is scarcest then." It adds: "The scarcity is due in large part to the feeder's dislike for feeding during the late summer months when flies are at their worst. DDT may change that, and make summer more favored as a feeding time."

NOTE: The discussions on the next pages state that a spray containing 2½% water-dispersible DDT was used on the animals in Florida, while a spray containing only 0.2% DDT was used on the animals in Kansas. The Florida tests were made primarily to determine whether a single treatment would eliminate the heavy fly infestation over one large area, on stock that usually roams the ranges and is seldom rounded up. That is why the concentration used in Florida was so much greater than in Kansas where the treated animals were in individual herds scattered over the state, with three or four treatments at approximately three-week intervals.

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: FLORIDA --- FEDERAL ENTOMOLOGIST TELLS STOCKMEN RESULTS OF TESTS WITH
: DDT ON RANGE AND DAIRY CATTLE "EXCEED EXPECTATIONS"
:

: Congratulating the stockmen of Orange County, Florida, and ad-
: jacent areas on their participation and cooperation in the largest
: and "certainly the most successful test" yet undertaken with DDT
: insecticidal sprays and dips for control of flies and other in-
: sects on range and dairy cattle, W. G. Bruce, federal entomologist,
: recently said:

: "The results certainly exceed our expectations."
:

: Mr. Bruce said some livestock producers remarked that their cows
: no longer need to switch their tails which, they say, "might as well
: be cut off and used for ox-tail soup."

: The federal entomologist reported that HORN FLIES were almost
: completely eliminated with one spray of 2½% water-dispersible DDT.
: Excellent results were also obtained in control of HOUSE FLIES,
: STABLE FLIES, LICE, and MOSQUITOES, as outlined below.
:

FLORIDA --- 27,000 RANGE AND DAIRY CATTLE TREATED WITH DDT --
COMMUNITY COOPERATION URGED BY FEDERAL ENTOMOLOGIST

Early in August, 1945, the most extensive test yet undertaken in the treatment of cattle with DDT insecticide took place in Florida. More than 15,000 head of range and dairy stock were sprayed in Orange County alone. This involved 132 cooperators and 350 square miles of territory. In addition, nearly 7,500 head were sprayed in Osceola County, 1,200 in Brevard County, and 2,000 in Lake County. An additional 1,000 cattle went through dip tanks. Some horses and goats were also treated, and about 250,000 square feet of barn interiors were sprayed.

"The primary object of the wide-scale test was to determine whether the heavy fly infestation (principally the horn fly) could be eliminated and, if so, over how long a period the control would persist after a single treatment," according to an article in the October "Florida Cattle-men," by Carl W. Peterson of the Du Pont Company, who assisted with the work. "There were a number of other factors the entomologists expected to study carefully, such as possible reduction in screwworm cases, but it was horn-fly control that was principally under examination."

Continued on next page

Orange County and adjacent areas were selected by W. G. Bruce, in charge of the Savannah, Ga., laboratory of the U. S. Department of Agriculture's Bureau of Entomology and Plant Quarantine, because, to use his words, "if DDT will do a job on Orange County cattle, it will do it anywhere. Conditions are severe; heavy summer showers are frequent; stock roam through woodland ranges and are seldom rounded up; insect pests are numerous as well as various."

Detailed arrangements for the Orange County test were made by K. C. Moore, county agricultural agent at Orlando. Assisting Mr. Bruce in planning and supervising the evaluation was E. B. Blakeslee, also of the Savannah, Ga., laboratory.

The DDT allotted the test was contributed by the Du Pont Company in the form of 1,800 pounds of "Deenate" water-dispersible powder insecticide containing 50% DDT. For the purpose of this single-treatment test under severe Florida summer conditions, the "Deenate" was diluted with water to 2½ per cent for spraying purposes. (See "Note" at bottom of page 2.)

Infestations of 3,000 Flies per Head Practically Eliminated in 48 Hours

Forty-eight hours after the spraying, the herds were inspected. Ranches which had an infestation of from 1,000 to 15,000 flies per head of cattle, with an estimated over-all average of 3,000 per head, found the pests had been practically eliminated. Herds were grazing without a switching tail discernible. Cattle were observed lying down and resting during the day -- a sight stock-owners said they had not seen since the previous winter.

Full Report Being Compiled by U.S.D.A.

A full and complete study will be made of the results that are being compiled by the U. S. Bureau of Entomology and Plant Quarantine to determine more exactly the duration of control before a definite spray program is recommended for Florida conditions. Meantime, Mr. Bruce in his talk before the Florida stockmen said: "Since we do not have complete results on other tests, we will stick to this 2½ per cent for spraying cattle. This would be 2 pounds of 50% water-dispersible DDT to 5 gallons of water."

Mr. Bruce explained that the best results, as expected, were inside the treated area. "The nearer the center, the more complete were the results," he added, emphasizing the need for cooperation among all the livestock producers of any infested area.

He said that HORN FLIES were completely eliminated with one spray of 2½ per cent water-dispersible DDT. "On the outer edges of the area, after two months, horn flies are back, but nowhere are they yet a problem."

Mr. Bruce also reported excellent results on HOUSE FLIES. "We saw barns with so many flies that, when stirred up, it was difficult to see from one end of the barn to the other. We sprayed barns with 2½ per cent DDT, the same as we used on the cattle. The most flies we have found, two months after spraying in barns, were about 22. In most dairies we have had to hunt to find two or three."

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KANSAS --- MORE THAN 8,000 CATTLE IN SIXTEEN COUNTIES FREED BY DDT
SPRAYS AND DIPS FROM FLY TORMENT IN BARNs AND ON PASTURE

Following one of the two most extensive tests of its kind in this country last summer -- the other being in Florida -- a Kansas City "Star" writer reported that "Kansas cattle have no reason to switch their tails for comfort after spraying with DDT, a fly-control experiment started June 11 has revealed."

He said cattle sprayed were free from flies from 10 to 14 days after the first treatment. Three to four treatments were applied to the various herds scattered around the State, with an average three-week interval between treatments.

A water-dispersible powder containing 50% DDT and an emulsifiable oil containing 25% DDT were used; these products were diluted with water to a spray containing 0.2% DDT and a dip containing 0.1% DDT for treatment of animals, and a spray containing 5% DDT for spraying barns and other livestock buildings. (See "Note" at bottom of page 2.)

"Outstanding results were obtained in controlling horn flies on the animals and stable and house flies in the barns," according to Carl W. Peterson of the Du Pont Company, who cooperated in the Kansas tests. Weight records kept on beef cattle in the experiments showed average weight gain of treated cattle over untreated of about $\frac{1}{2}$ lb. per day in cows and steers and $\frac{3}{4}$ lb. per day in calves.

DDT Tested Under Actual Farm and Ranch Conditions

More than 8,000 cattle were sprayed or dipped with DDT and water insecticides on some 30 farms and ranches. Sixteen counties were visited by the scientists on their first trip around the State. The test, conducted under the auspices of Dr. E. W. Laake, U.S.D.A. Bureau of Entomology and Plant Quarantine, Dallas; Will J. Miller, state livestock sanitary commissioner, Topeka; Dr. E. G. Kelly, Extension Division, Kansas State College at Manhattan; and Ray L. Cuff, regional manager, the National Livestock Loss Prevention Board at Kansas City; was made to determine the effectiveness of the DDT formulations on flies under actual farm and ranch conditions.

According to Mr. Cuff, the dipping does a better job in getting complete coverage of the animal with the chemical, but is more expensive and involves more work than does the spray. The spray can be taken to the cattle, while it is necessary to drive the cattle to a dipping vat. Incidentally, horses, hogs, and dogs were sprayed when they were in the neighborhood of the sprayer while it was on the various farms.

"The general observation has been that for the first ten days after the cattle were treated they were virtually clean of flies," the "Star"

Continued on next page

report says. "After 10 to 16 days the flies came on fast, indicating the necessity for the second treatment. Noticeable about the treated cattle is that they fan out in the pasture while eating, instead of bunching, which is the usual procedure of livestock seeking protection from tormenting flies."

Further details regarding these Kansas tests were reported by Roderick Turnbull in "Farm Journal" for August, 1945. He says that in the midst of hornfly season, the treated cattle "lie in their pastures, chewing their cuds, as contented as cats on cushions. Across the fence, untreated cattle are bunched up, switching their tails, to get rid of their tormenters." He quotes Dr. Kelly, Kansas extension entomologist, as saying "The results appear to be so good I am almost afraid to trust my own judgment on what to say about DDT."

Farmer Reports Cows Gave 15% More Milk After Treatment

One farmer in the test estimated his Shorthorns gave 15 per cent more milk after DDT got rid of the flies. On another farm, a bull literally encrusted with lice was sprayed. Fifteen minutes later, the lice began to fall off and die. Half of the 188 heifers belonging to Wayne Roglerz were dipped, the others went untreated. Running together in the same pasture, it soon was impossible to tell the dipped from the undipped, because the flies migrating from the untreated animals were killed by DDT on the treated ones. The flies gradually were eliminated.

Some Observations on Kansas Tests

A summary of Ray Cuff's observations on the tests follows:

"DDT treatment of cattle will revolutionize summer cattle feeding.

"It will increase gains on pasture cattle and calves of from one-half pound to one pound per day during three months' fly season.

"Because DDT-treated cattle show better quality, they sell for more.

"The treatment increases milk production from 8% to 20%.

"Spraying barns, sheds, chicken and hog houses clears buildings of flies, fleas, mosquitoes, and grain beetles for comparatively long periods.

"Treating calves and barns may help prevent calf scours.

"DDT treatment helps clear up raw spots made by flies on skin.

"Treating cattle should mean added protection from insect-borne disease organisms, such as Anaplasmosis.

"DDT is "tops" as a practical louse killer on most farm animals.

"DDT in proper formulations and concentrations is safe for both humans and cattle, has long residual properties, and is efficient and inexpensive."

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TEXAS --- DDT FOR GOAT LICE, HORN FLIES, CATTLE LICE, SHEEP TICKS AND
LICE, WINTER HORSE TICKS, AND BLUE BUGS AND LICE ON POULTRY

Research work with DDT on external parasites of livestock has been conducted with much success under the supervision of Henry E. Parish, at the Menard, Texas, field station, and under Dr. E. W. Laake at the Dallas field station of the U. S. Bureau of Entomology and Plant Quarantine. It was under Dr. Laake's direction that the information on horn flies and lice on cattle, mentioned below, was developed.

Mr. Parish, in the November "Sheep & Goat Raiser," reviews some of these results. Among interesting uses for DDT he lists these:

Goat Lice Dip -- Mr. Parish says apparently DDT fills the demand for a dip that will control in one dipping all species of lice commonly found on both freshly sheared goats and those in the hair, when used at correct strength and in the proper type of formulation. He says the recommended formulation was the result of dipping about 25,000 head of goats in field tests in five counties. He adds: "The dip not only kills the lice in one dipping, but preserves the luster of the mohair and does not harm the animal." The formula for the dip will be available in time for spring dipping.

Horn Flies -- Dr. Laake's tests show that this serious pest of cattle may be controlled with DDT sprays and dips. "It is extremely important to secure materials for this work from a reliable dealer that handles a proved product in order that undesirable effects on the animals may not result," Mr. Parish says.

Cattle Lice -- Mr. Parish cautions that Dr. Laake's work shows it is necessary to treat cattle twice with dips containing DDT. "Practically all lice are killed by the first dipping, but a few survive. If the cattle are dipped again, 18 days after the first dipping, all animals should be free of lice."

Sheep Ticks and Lice -- Proper DDT formulations will control sheep ticks and lice with one dipping, Mr. Parish says. He adds: "Sheep ticks not only soil the wool, but cause great annoyance to the animal. The sheep louse is one of the most destructive parasites of sheep. It not only annoys sheep by crawling on the body, but bites through the fibers of the wool and as a result the sheep take on a taggy appearance."

Winter Horse Ticks -- One of the major external parasites of horses as well as cattle over a wide area of the United States is the winter horse tick. It is active in cold weather. Horses seriously infested develop "tick poisoning" or "water belly." When the disease reaches the advanced

Continued on next page

stage, the animal soon dies unless the parasites are removed and the horse given special food and care. This tick, which also causes considerable damage to young calves, is a contributing factor in winter loss of cattle, especially during "hard" winters. Field tests show that this parasite can be controlled on horses by a wash of DDT, which is best applied with a sponge. Research is attempting to develop a more rapid method. DDT not only gives a 100 per cent kill, but offers several weeks of protection from reinfestations. Mr. Parish again admonishes: "Since horses are one of the most sensitive domestic animals to chemical treatment, precautions should be used in treating them with only a product that has been thoroughly tested and proved unharmed."

Poultry Parasites - On this subject, Mr. Parish reports: "Blue bugs, almost always present in poultry houses, may be controlled with DDT residual spray with one application. Preliminary experimental data indicate that chicken lice may be controlled with DDT dust." Mr. Parish reports that treating the chickens individually "resulted in perfect control." In his tests, some of the birds were dipped in a 0.2% suspension, while others were dusted with 5% DDT powder.

Flies and Other Insects in Houses, Barns, and Outbuildings -- Stating that a residue left by a spray containing DDT is probably more effective against house and stable flies than any other treatment, Mr. Parish offers suggestions for its use for these insects. He also gives brief recommendations for use of DDT to control other pests in the house, such as mosquitoes, fleas, ants, and bedbugs.

#####

ARIZONA AND WYOMING --- DDT CONTROLS GRASSHOPPERS IN GOVERNMENT TESTS

Grasshoppers in Wyoming and Arizona tests were highly susceptible to DDT in dusts or sprays, according to Dr. J. R. Parker of the U. S. Bureau of Entomology and Plant Quarantine.

DDT in pyrophyllite, applied either as a dust or spray, reduced heavy infestations of grasshoppers to noneconomic numbers without injury to the foliage, says a report on this work in the September 10 issue of "Hoard's Dairyman."

"At present the use of DDT in some form seems to offer the most promise of controlling grasshoppers in seed alfalfa and other tall, dense vegetation," the report continues. "It is the only material tested thus far that has killed high percentages of grasshoppers without injuring the vegetation, but the persistence of residues on the plants and the livestock-poisoning hazard involved remain to be determined."

"The fact that no dead bees were found in the treated plots does not necessarily mean, of course, that the DDT did not cause any mortality of these or other insects which pollinate alfalfa. It seems possible, however, that control of grasshoppers could be secured by applying DDT before the blooming period while pollinating insects are absent."

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ILLINOIS --- AFTER DDT TREATMENT BULL AND HERD HAVE TIME ON HANDS ---
PIGS SLEEP IN LICE-FREE DUST -- DOGS HAVE HAPPY LOOK

.....
: In reporting results of DDT demonstrations on the Trimble
: farm in Illinois, reviewed below, the "Prairie Farmer," for
: September 15, 1945, says:

: "The interested public came to observe the demonstration
: and it was a crowd marked by good faith and interest. The owner
: of a bakery, the cheese maker from the local cheese factory,
: the restaurant owner, the manufacturer of fly spray were there.

: "There was the caretaker of the country club worrying
: about the flies that pester the out-of-doors picnics. There
: were the housewife and dairy farmer. These folks wanted this
: weapon right away to avenge an age-old grudge toward insects."

.....
Carlton Trimble and his brother Tell held a demonstration with DDT
on their herd of Jerseys in Crawford County, Illinois, last summer. They
not only treated the cows, but the dogs, the feed rooms, and even the dust
where 124 spring pigs slept. And out in the pasture the bull was sprayed
with a hand gun. They report results, as follows:

"Then the pay-off came. In two hours the bull was at rest, and call-
ing for something to take up his time since he no longer had any flies to
fight. The pigs slept in the dust, and had no lice on them at all. A cup-
ful of dust was washed out, and the dead lice floated to the surface. The
dogs had a happy look -- and no fleas.

"Next morning the bull and his 30 heifers were almost entirely free
from flies. There were no flies on the ceiling of the barn, and none on the
wiring or at the windows. At the open door, a few flies came in and looked
around. They alighted on any surface, and soon were going through the death
struggle on the floor. The neighbor's herd was still fighting flies at a
normal rate."

A week later, Carlton Trimble offered the following postscript:
"The flies are yet conspicuous for their absence... The cows come from
pasture, bringing in all the flies from half mile around. After milking
they are in the pasture without flies."

Continued on next page

Branch Station Steers Didn't Know It Was August After Being Sprayed

One report says that 22 big steers in an Illinois Experiment Station herd at Dixon Springs didn't seem to know it was August, month of flies and bovine misery. They were not switching tails, stamping feet, nor bunching up to cooperate in fighting the pesky little insects that rob cattle producers of so many pounds of gain in late summer. Instead, they scattered to graze on a lush lespedeza field. A few miles away a farm herd was bunched in the shade of a great spreading tree. They milled about in an effort to obtain relief, looked gaunt instead of full. The report adds: "Difference was that the fat steers had been sprayed with a DDT preparation.....Apparently all the flies that had hatched out in their pasture had met that strange type of death that comes to many insects when they come in contact with the deadly DDT."

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IOWA --- TWENTY BULLS USED BY ARTIFICIAL INSEMINATION ASSOCIATION FREED BY DDT FROM TORMENT OF FLIES ON HOT AUGUST AFTERNOON

On Bert Brown's farm in Polk County, Iowa, are 20 bulls. These animals, owned by Dairy Genetics, Inc., Artificial Insemination Association, are kept in a barn sprayed inside and out with DDT. The bulls also were sprayed with a suspension made of powdered DDT.

A few days after the spraying, neighboring dairy farmers inspected the premises and animals and found that, while there were some flies in the barn and an occasional fly would light on a bull, the animals were not being tormented on a hot August afternoon. Barn walls were sprayed with a 25 per cent solution of DDT in oil, emulsified five to one in water. This is recommended by the Association to last for the season, except on the outside where the elements may reduce the efficiency. This strong emulsion of DDT is not recommended for direct application to animals.

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HOW DDT AFFECTS FLIES THAT ALIGHT ON TREATED SURFACES

"Shortly after a fly alights on a surface treated with DDT, it begins to stagger as if it had lost control of its legs," say Dr. W. E. Shull and Dr. Glenn C. Holm, of the Idaho Experiment Station. "When it takes off in flight, it weaves and wobbles, usually lands on the floor on its back, and buzzes around a bit before dying. DDT is not a 'fast worker', five or six hours sometimes being required to bring about a kill."

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IDAHO --- EXTENSION SERVICE ISSUES CIRCULAR TELLING HOW TO CONTROL
SHEEP TICKS AND WOOD TICKS BY SPRAYING WITH DDT AND ROTENONE

.....
: "Sheep and wood ticks have long been pests of sheep in Idaho,
: and they have caused considerable loss to the sheep industry. Sheep
: ticks are adult wingless flies. They spend their entire life on the
: sheep and move from one animal to another when the animals come in
: close contact. The older methods of tick control by dipping in
: various insecticides have been practiced to some extent with vari-
: able results, but many farm flocks and range bands have not been
: treated for the control of these pests. Many sheep men have con-
: sidered dipping to be too cumbersome, and not entirely effective.
: Dipping is not practical when the sheep are unshorn." -- Idaho Agri-
: cultural Extension Service Circular No. 88.
:

Recent investigations conducted by the Idaho Experiment Station show that sheep ticks (known as keds in some areas) and wood ticks can be effectively controlled by spraying, says a new Extension Circular No. 88, issued by the Entomology Section of the Idaho Extension Service. This leaflet, entitled "Tick Control on Sheep," by W. E. Shull, Glenn C. Holm, and H. C. Manis, says the best results were obtained by spraying before the sheep were shorn. The materials used were rotenone and DDT.

The DDT was much more effective than the rotenone for control of both ticks, the circular states. It explains that rotenone was used at a $\frac{1}{4}$ per cent and the DDT at a $\frac{1}{4}$ per cent concentration. Only one spray was necessary with DDT, while a second may be needed when using rotenone, it adds.

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IDAHO --- DDT SPRAYED ON WALLS AND CEILINGS OF DAIRY, CALF, AND HOG
BARN IN FALL ELIMINATES NEED FOR FLYTRAP ON UNIVERSITY FARM

The Idaho Experiment Station has controlled stable flies, houseflies, and blowflies with DDT with remarkable success. When DDT was sprayed on the walls and ceilings of the dairy, calf, and hog barns of the University Farm at Moscow in the fall, the air was full of flies, the ceiling and walls black, as usually is the case when cool nights drive the pests indoors in countless numbers. Within a few weeks great piles of dead flies had been swept up and one worker remarked: "I've never seen so few flies at this time of year." The flytraps which ordinarily had to be emptied two or three times each fall, were not even in use. Within a month, when the flies should have been at their worst, the barns were as fly-free as in cold weather.

#####

ARKANSAS --- COMPLETE CONTROL OF FLIES OBTAINED IN FEW DAYS WITH DDT
SPRAYED ON BEEF AND DAIRY CATTLE AND FARMER'S WORKSTOCK

DDT controlled all flies on three herds of cattle sprayed in a demonstration in Perry County, Arkansas. Dr. Charles Lincoln, extension entomologist at the University of Arkansas, who directed the tests, reports that half of one farmer's cattle, both beef and dairy animals, and all of the other two farmers' cattle and workstock were sprayed in July, with a mixture of one pound of water-dispersible powder containing 50% DDT with 30 gallons of water. This was enough to wet 90 head of livestock thoroughly, Dr. Lincoln says. He adds:

"Daily observations by the demonstrators and County Agent Jodie W. McMullen indicated that flies wet with the DDT spray invariably died. There were very slight differences in fly population on the first day after spraying. The second day fly population was reduced 50 per cent; the third day, 75 per cent; and the fourth day, there were only eight to ten flies per animal. Control was about the same for cattle and workstock.

"Control of flies in the herd where half of the cattle were sprayed was not as rapid as where all of the cattle were sprayed, but control in all herds was complete by the end of the fourth day of spraying. One week after the cattle were sprayed no flies were on the heads of the animals, and only four to eight flies were on their bodies.

"After two weeks, control was still complete in the two herds where all animals were sprayed, and about 80 per cent complete in the herd where half of the cattle were sprayed."

#####

CALIFORNIA --- STATION SCIENTISTS CONVINCED SINGLE DDT SPRAY IN DAIRY
BUILDINGS WILL CONTROL FLIES FOR SIX TO EIGHT WEEKS

Research workers at the University of California Agricultural Experiment Station are convinced that one spraying with DDT will control flies in dairy buildings for six weeks during the hottest part of the year, and for more than two months during the cooler seasons in that State.

Their tests indicate that to obtain best control of flies, not only the interior of the dairy barn but also side walls, roofs or sheds, and other surfaces where flies congregate or breed should be sprayed.

They caution that care should be taken that the spray does not get into milk cans or other utensils in the washroom and cooling room. In their opinion, feed troughs should be hosed down before and after spraying, and the spray should not be allowed to wet feedstuffs.

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CALIFORNIA --- DDT WATER EMULSIONS SPRAYED IN BROODER HOUSE CONTROL
FLIES WITH NO ILL EFFECTS TO POULTS PUT INTO PENS NEXT DAY

On one turkey ranch in California, DDT-water emulsions were sprayed on eight of ten rooms of a brooder house a few hours before the litter was put on the floor on May 17. Dr. E. McNeil and Dr. W. R. Hinshaw, University of California scientists, report the outside front and sides of the house, which were black with fly specks, were also sprayed, as well as a lane between two brooder houses. Both houseflies and blowflies as well as Hippelates gnats were abundant. Spraying was finished by 5 p.m. By 8 p.m. large numbers of flies in the brooder house were showing the nervous symptoms characteristic of DDT poisoning. Next morning the floors of the treated pens were covered with dead flies, but there were a few on the walls and rafters. In contrast, the walls and rafters of the two untreated pens were covered with flies. There were also large numbers of dead and sick tulle beetles and a few dead spiders. The two control pens were then also sprayed.

At noon on May 18 poults were put in five of the pens, including one which had been sprayed only three hours before. No injurious effects were noted at any time in the poults, although they ate some of the flies which continued to fall from the ceiling into the feed and water. A week later there were no flies in the brooder house or on the outside walls. There was also an amazing reduction of flies on the sprayed area of ground in the lane between the houses. Four weeks after spraying there were still no live flies in the brooder house, although occasional dead ones were found on the floor near the walls. At six weeks, no flies were discovered in the air; nor on the walls or rafters, but some must have entered from time to time, since a few maggots were found in the droppings under the wire platforms. By August 1, (10½ weeks) control was no longer very effective. Results were apparent in the lane for three weeks, despite continual walking along the path which would remove much of the residual spray. The beneficial results obtained are probably due to the residue left on the weeds in the lane, according to the California research workers.

Two Other Trials Conducted At Same Time

Two other trials were made on May 17. The droppings under one wire platform had not been removed recently, and maggots were abundant in certain spots. These areas were thoroughly sprayed with DDT and left for three or four days. At the end of that time the manure was removed, and maggots were found only in areas directly behind posts which had received insufficient amounts of spray.

On the same day, the inside and outside of the back porch of the residence were also sprayed. A week later the owner reported there was no longer a fly problem in the house. This lasted for about one month.

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"ZERLATE" FUNGICIDE, ORGANIC SULFUR DERIVATIVE, AVAILABLE TO GROWERS

A new and effective fungicide for use separately against numerous diseases that attack growing plants, or in combination with various standard insecticides such as DDT to control both diseases and insects, is now available in quantity. It is "Zerlate" fungicide, based on zinc dimethyldithiocarbamate.

Both "Zerlate" and "Fermate" Show Promise as Sprays and Dusts

Both this new product and its slightly older sister, "Fermate" fungicide, which is based on ferric dimethyldithiocarbamate, show unusual promise for use as sprays and dusts.

"They are superior to copper and sulfur fungicides for the control of many important plant diseases and are effective against some diseases, such as tomato anthracnose, for which there has been no satisfactory control," according to officials of Du Pont's Grasselli Chemicals Department.

"Zerlate" is compatible with commonly used insecticides, which might normally be used in combination for control of both insects and diseases. Used alone, it is recommended for control of early and late blight of potatoes; leaf-blight diseases of celery; leaf-spot diseases and anthracnose of tomatoes; leaf-spot diseases of cucumbers, melons, and other cucurbits; and indirectly wilt disease of cucumbers by repelling cucumber beetles that transmit this disease. It also controls brown rot of peaches, and one application usually protects peaches against Japanese beetle for seven to ten days.

"Fermate" or some other established fungicide should be used on apples or sour cherries. "Fermate" has been rather widely used for a couple of growing seasons for treatment of numerous fungous diseases on a variety of fruits, vegetables, and other crops. It is outstanding for control of blue mold in tobacco seedbeds, scab and rust diseases of apples, scab on pears, anthracnose on tomatoes and beans, and several fruit rots on cranberries.

NOTE: General leaflets on the two fungicides discussed above, and a special leaflet on "Fermate" fungicide for control of blue mold in tobacco seedbeds, will be sent upon request. Address Editor, Du Pont "Agricultural News Letter," Wilmington 98, Del.

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VETERINARIANS SWITCHING TO WAR-DEVELOPED WOUND POWDER FOR TREATING LIVESTOCK

Reports of successful application to livestock of war-developed urea-sulfa wound powder tend to bear out earlier predictions by veterinarians that this new medicament will largely supplant present methods of treating wounds of farm animals.

Dr. G. C. Holm, veterinarian of the Idaho Agricultural Experiment Station at Moscow, is one of those who have switched to the new powder for livestock. He uses the formula developed by the Office of the Surgeon General of the Army, as follows: calcium phosphate 2%; pure crystal urea 83%; sulfanalimide 13%; and sulfathiazole 2%. Dr. Holm recently showed visitors a horse he was treating with the powder. The animal had been badly cut on a plow in a runaway two days before.

A representative of "The Oregon Farmer," who saw the animal, says the wound was dry and healing nicely. His published report adds: "Water never should be used for cleaning wounds for horses, Dr. Holm explained, because of irritation which may cause proud flesh to develop. On other animals watery disinfectants are not too bad. After dusting a wound with the powder, he likes to apply a wound balsam as a protective covering to keep the dirt out."

The report says the new powder is supplied to and can be obtained from veterinarians, and that one biological supply house packages it in spring-top dusting cans "similar to those in which old-fashioned bedbug powder used to be sold."

Dusting Powder Contains High Percentages of Pure Urea

The article points out that "one of the interesting things about the powder is its high percentage of urea. Not so many years ago investigators found that live maggots in human wounds were effective in promoting healing. It was thought at the time that they ate destroyed tissues, thus keeping the wound clean. Later it was discovered that the urea they excreted was the real healing agent."

Veterinarian Should Be Called In Cases of Severe Injuries

It continues: "Good as this powder has been found to be, it has its limitations. It is effective against most of the common infection organisms, but not against the one which causes tetanus or lockjaw. Farmers can make good use of it on a first-aid basis. In cases of severe injuries, a veterinarian still should be called."

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"CEL-O-GLASS" PLASTIC COATED WIRE MESH WINDOW MATERIAL AVAILABLE AGAIN

"Cel-O-Glass" plastic coated wire mesh window material that brings the sun's ultra-violet rays indoors is back from the wars to serve American agriculture again.

Because it comes in comparatively small space-saving rolls, is flexible and nonbreakable, and therefore easy to transport and install, all of this product has been used by the Armed forces as a window material in the Zone of Advance for more than three and a half years.

"Cel-O-Glass" has a long record of usefulness on the farm, one of the most important of which is the bringing of health-giving rays into poultry houses. Entrance of vitamin-D activating sunlight through this clear, durable wire-base material, which cannot tear like cloth nor break like glass, results in increased winter egg production, improved shell texture, and stronger ricket-free chicks.

Other structures where this weather-proof product is used with success include hog houses, cold frames, hot beds, dairy barns, milk houses, rabbit hutches, barns, garages, dog kennels, sun parlors, porches, storm doors and windows, cellar windows, and emergency enclosures.

Endorsed or used by practically all agricultural experiment stations as well as hundreds of poultrymen and plant growers in this country, "Cel-O-Glass," which has been serving American agriculture for more than 20 years, is guaranteed to last five years -- and usually lasts much longer. Correctly installed, it keeps poultry houses and other structures warmer than ordinary glass, keeping the cold out and the heat in, providing warmth, light, health, and protection, according to officials of Du Pont's Fine Chemicals Division.

Use of this material on cold frames, hot beds, and as plant covers, promotes earlier, stronger growth and better color of crops. It makes a lightweight sash that will not break, that is hail-proof and frost-proof, and that weathers well. Cones, row covers, and cylinders are easily constructed from this flexible easily-handled material.

NOTE: A leaflet, with a small sample of "Cel-O-Glass" plastic coated wire mesh attached, will be sent upon request. Address the Editor, Du Pont "Agricultural News Letter," Wilmington 98, Del.

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A BOOKLET FOR HUNTERS -- "HOW TO DRESS, SHIP AND COOK WILD GAME"

A new 40-page booklet that will interest every hunter has been published by the Remington Arms Company, an affiliate of Du Pont. Its title, "How To Dress, Ship and Cook Wild Game," tells the story of its contents.

Written by some of America's most experienced sportsmen, the booklet contains full instructions on how to take care of game birds and animals from the time they fall in the field until they reach the table. Wild game not only has a food value equal to that of domestic birds and animals, but it has a flavor that is unusual and exciting as well.

Many conditions the hunter encounters in the field, such as excessive heat, wet weather, and dampness, or inability to place the meat in refrigeration, may cause spoilage, loss of flavor, or toughening of the meat. This booklet describes the best methods of handling game of all types to avoid waste and spoilage.

Gourmets will revel in the recipes that run the whole gamut of game, furred or feathered. Remington's booklet offers enough recipes on the cooking of any species of North American game to satisfy the tastes of all.

A Few Short Cuts Suggested

A few of the many short cuts to proper preparation, shipping, and cooking of game included in the booklet are:

For transporting game, 25 pounds of dry ice will keep 75 pounds of well-packed game frozen for five days or longer under normal conditions.

Plucking of ducks can be made much easier if the ducks are first dipped in a mixture of hot water and melted paraffin.

Because orange sauces greatly enhance the flavor of wild game, it is a good idea to use orange juice instead of water during the cooking.

A cloth dipped in scalding water will quickly wipe away stray bits of fur from wild meat.

NOTE: Copies may be obtained by sending
10¢ to cover handling and mailing
to Remington Arms Company, Inc.,
Dept. CB, Bridgeport 2, Conn.

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TIME-LAPSE MOTION-PICTURE PHOTOGRAPHY SHOWS MICROSCOPIC FUNGOUS
DISEASE SPORES DEVELOP INTO ORGANISMS THAT DESTROY GROWING PLANTS

Did you ever see a plant growing? Or tiny, microscopic spores develop into deadly disease-producing organisms turning and writhing in the heart of otherwise healthy plants? Or a stalk wilt down from disease and finally turn brown and die?

These and other secrets of dangerous plant diseases are revealed for the first time in motion pictures now being offered by the Du Pont Semesan Company. Some remarkable methods of photography are utilized to illustrate the work of deadly plant diseases and their elimination. For example, time-lapse photography makes it possible to see the whole cycle of the growth of brown-patch fungus from a small speck to the threadlike tentacles of the mycelium which snakes its way through the pores of the plant and pierces its cell.

Striking improvements in crop quality and yield through fighting numerous seed-borne and soil-borne diseases such as smut, that "black scourge" of grain; damping-off of vegetables; anthracnose and sore-shin of cotton; rhizoctonia of potatoes; and root rot of corn, with chemical seed disinfectants and protectants are seen in actual laboratory and field results.

Views of the New York vegetable market in operation, the National Corn Husking Contest, and scenes on championship golf greens are a few of the portrayals taken from everyday life.

A brief review of the eight films now available follows.

Enemies Of Fine Grasses

In addition to the time-lapse photography which shows the green leaf wilt and turn brown from brown-patch disease, the picture identifies the various enemies of grass, and shows laboratory experiments of pathologists developing fungicides to fight them. Proper use of these fungicides is demonstrated.

Black Scourge

The ways in which the scientist and farmer work together to reduce grain-disease losses are shown. The life story of smut is outlined. With the knowledge of how the disease-producing organism grows and lives, the battle against this "black scourge" is being won. Such well-known villains as stinking smut of wheat, the smuts of oats and rye, stripe disease of barley, and seedling diseases of corn are depicted.

Continued on next page

Feeding the Multitude

The distribution of vegetables through wholesale and retail trade in one of the world's largest markets -- New York City -- is of interest to every grower. The story of vegetable growers' struggle to deliver high-quality produce at the markets is a fascinating one. The many vegetable diseases which the growers must battle are shown. The "seed" or spores of several diseases, also the actual growth of one of these fungi on the seed are seen. Two amazing scenes give the results of planting protected and unprotected seed, picturing the growing of plants from seed and the subsequent dying of the unprotected plants.

Grain Thieves

The various steps in marketing grain, including inspection, dockage, and dumping a box carload of wheat at the terminal elevator, make an interesting story. The farmers' tremendous losses from cereal diseases; the life story of smut; close-ups of other seed-borne diseases; and an easy method of preventing these losses are dramatized. An unusual feature is actual growth of barley from seed to plant, taken over a period of 21 days. This shows the striking difference in stand and vigor of growth between the diseaserobbed and the protected plants.

King Cotton

The story of how Paul Blair, who frequently raised poor cotton crops, became a successful cotton grower by following Master Farmer John Clark's advice, is vividly told. Master Farmer Clark tells Blair how he raised paying crops of cotton; warns him against the seed-borne diseases that reduce yields; and shows him how to prevent these losses. The results of Blair's field tests prove that prevention of seed rotting, seedling damping-off and certain other diseases, increased his stands and yields of cotton. An amazing scene of plants growing from unprotected and protected seed and the killing of a plant by damping-off is shown. Supplementing Blair's results are those of the Experiment Stations which prove conclusively that war on disease pays the grower a splendid profit on a small investment.

Seeds of Prosperity

Cotton forms the basis for such products as automobile tires, photographic film, soap, lacquer, cosmetics, and the plastic ingredients that go to make up telephones, radios, and many other conveniences. This picture dramatically portrays the threatening scourge that menaces the crop, and the disease problems of the cotton farmer. It dramatizes the fight that science is making for the farmer, industry, and the whole nation -- the fight against the boll weevil and diseases such as anthracnose, angular leafspot, shinskin, and boll rot.

Peruvian Gold

The early history of the potato in Peru -- its origin -- scenes in the home country -- facts about the American potato crop and the vast

Continued on next page

amount of money lost from diseases are pictured. The symptoms of the most dreaded diseases and the methods of combating them are vividly shown. The pictures were taken under the supervision of the plant-disease expert specializing in each particular disease. The rhizoctonia fungus is seen actually growing from its sclerotia (seed). The results obtained by growers in combating diseases are shown.

Tall Corn

The great sporting event of the Corn Belt -- a National Corn Husking Contest -- the crowd, field, favorites in action, and a world's champion husker, all are shown. The film vividly portrays the causes of missing hills, weak, barren stalks and "down" corn. The actual growth of a root-rot organism, responsible for rotting of the seed, roots, and stems of the corn, is presented. The actual growing of protected corn is contrasted with that of unprotected plants, some of which are killed by diseases.

NOTE: Each of the one-reel, sound-on-film pictures described above, runs about 12 minutes, and is available in either 35 mm. or 16 mm. size, without charge, to theaters, agricultural colleges, county agents, vocational teachers, dealers, and responsible farm and garden organizations. Send your requests to the Editor, "Agricultural News Letter," Wilmington 98, Delaware.

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USDA SAYS PHENOTHIAZINE WORTH TEN MILLIONS ANNUALLY TO STOCKMEN

Within five years after the discovery that phenothiazine was effective for removing internal parasites from livestock, this remedy became more widely used for that purpose than any other drug, says the U.S. Department of Agriculture's "Research Achievement Sheet," entitled "Phenothiazine, Versatile Drug for Controlling Livestock Parasites." The government statement estimates the value of this drug to stockmen of this country at \$10,000,000 or more annually. It adds:

"It was recently estimated by sheep specialists in Kentucky that better control of sheep parasites, which is now available with phenothiazine, would prevent losses amounting to \$1,000,000 in that State alone." It says the Kentucky College of Agriculture is doing something about this matter, "the merits of phenothiazine last year having provided topics for a series of meetings constituting 'Phenothiazine Week,' sponsored by veterinary, livestock, extension, and marketing officials."

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